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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/814,344

04/01/2004

Yoshiaki Sakagami

59406.00016

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02/04/2009

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EXAMINER

RICE, ELISA M

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

02/04/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/814,344	<b>Applicant(s)</b> SAKAGAMI ET AL.	
	<b>Examiner</b> ELISA M. RICE	<b>Art Unit</b> 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 January 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 14, 2009 has been entered.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1 and 3-10 have been considered but are moot in view of the new ground(s) of rejection of Higaki reference (2004/0028260 A1) as discussed below.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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**Claims 1 and 3-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Higaki et. al. (US 2004/0028260 A1) in view of Kuno (5,467,403) and Ishii (6,278,904).

**In Regards to Claims 1 and 10:**

Higaki discloses an image transmission system for a mobile robot, comprising:

a camera for capturing an image as an image signal (“employing 2-color CCDs, with L and R denoting the left side camera and the right side camera respectively”, Higaki, paragraph 41; Higaki, Figure 1, 1L and 1R).

a camera for capturing an image as an image signal (Higaki, "camera" Fig. 1, num. 1L and 1R)

human detecting means for detecting a human from the captured image (“characteristic features such as the face and the hands of a person can be detected from the extracted outline information”, Higaki, paragraph 13; Higaki, Fig.1, num. 58 and 59; Higaki, Fig. 9, S47);

a power drive unit for moving the entire robot toward the detected human (“a drive control section”, Higaki, paragraph 41; Higaki, Figure 1, 9);

face identifying means for identifying a position of a face of the detected human (Higaki, Fig. 6, num. S32 “Extract Head Vertex Point” immediately after S31 “Extract Outline”)

face image cut out means for cutting out a portion of the captured image of the detected human so that the portion of the image includes a face image of the detected human (“reference symbol 54 denotes an outline extraction section which extracts an outline”; Higaki, Figure 1, 54) ; and

means for monitoring state variables (“the person information map 10 defines the relative position between the person and the autonomous relative position between the person and the autonomous robot R, in order to grasp where the person issuing instructions currently is. The person information map 110 includes: an individual person ID 111 for uniquely specifying persons, a relative position to self 112, a face object ID 113, and individual person ID 114, a posture ID 115, a moving object ID 116, a face position coordinate 118 in the real space, a hand position coordinate 119, a distance to self 120, a relative angle to self 121, an outline contact point coordinate 122, and a head vertex point coordinate 123”, paragraph 87, “the operation for renewing the person information map in the object integration section 62 is described with reference to Figure 15”, paragraph 88 and “the operation for renewing the person information map in the object integration section 62 is described with reference to Figure 15”, paragraph 88)

Higaki does not disclose an image transmitting means for transmitting only the cut out portion of the image including the face image to an external t to an external terminal or means for monitoring state variables comprising a current position of the robot and the

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image transmitting means transmitting the monitored state variables in addition to the cut out face image.

Kuno (5,802,494) teaches an image transmitting means for transmitting only the cut out portion of the image including the face image to an external terminal (“and the signals showing the subject’s image are transmitted to a CRT display installed in a monitor room”, column 1, lines 60-62, “the image of the subject’s head is extracted from the input image (Figure 11A)”, column 9, lines 43-44)

It would have been obvious at the time of the invention to a person of ordinary skill in the art to combine the image transmission system for a mobile robot with the elements as disclosed by Higaki with an image transmitting means for transmitting a human image to an external terminal taught by Kuno in order to monitor an individual from a remote location (“The CRT display displays the image of the subject, whereby a physician in the monitor room can observe the subject”, Kuno, column 1, lines 22-24)

The combination of Higaki and Kuno does not explicitly disclose means for monitoring state variables comprising a current position of the robot and the image transmitting means transmitting the monitored state variable in addition to the cut out face image.

Ishii does teach means for monitoring state variables comprising a current position of the robot and image transmitting means transmitting the monitored state variable in

addition to the cut out face image (“In the first embodiment, the information captured through the image sensor 11 and the audio sensor 12 is used for the purpose of detecting a current position of the robot 10 in order for the robot 10 to move around all objects to be monitored or to monitor a specified object. The information captured through the image sensor 11 and the audio sensor 12 is also stored in the robot 10, or transferred externally through the communications device 19 and stored in an external device, as the monitoring data”, column 5, lines 10-15).

It would have been obvious at the time of the invention to a person of ordinary skill in the art to combine the image transmission system for a mobile robot with the elements as disclosed by Higaki and Kuno in the discussion above with the means for monitoring state variable comprising a current position of the robot and an image transmitting means transmitting the monitored state variables in addition to the cut out face image as taught by Ishii, in order to be able to observe a predetermined object and keep track of its location and other state variables of interest (“detecting a current position of the robot 10 in order for the robot to move around all objects to be monitored or to monitor a specified object” and “the information captured through the image sensor 11 and the audio sensor 12 is also stored in the robot 10, or transferred externally through the communications device 19 and stored in an external device, as the monitoring data”, Ishii, column 5, lines 10-15).

**Regarding claim 3**, the combination of Higaki, Kuno, and Ishii discloses an image

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transmission system according to claim 1, wherein the system is adapted to have the robot direct the camera toward the position of the detected human ("obtains the pan angle and tilt angle of the cameras 1L and 1R (step S81). The line of sight instruction section sends the obtained pan angle and the tilt angle to the action control section 9 (step S82). As a result, the cameras 1L and 1R always come to face the direction of the head of the person who issues the instruction "come", it becomes possible to track the person", Higaki, paragraph 94)

**Regarding claim 4**, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the system further comprises means for measuring a distance to each of a plurality of humans, the human detecting means being provided with means for detecting a human closest to the robot ("a distance calculation device that calculates a distance to the body being the candidate, from distance information of each pixel within the outline in the image", paragraph 12 and "the movement instruction section 64, based on the moving object data 90, tracks the person who instructed "come" (step S95)", Higaki, paragraph 95; "The robot 5 has several ultrasonic sensors on its trunk. The ultrasonic sensors detect the distances between the robot 5 and the other objects in the sick room. An alarm signal is generated and transmitted to the monitor section 2 when any ultrasonic sensor detects that the robot 5 is too close to any other object.", Kuno, column 30, lines 34-39).

**Regarding claim 5**, the combination of Higaki, Kuno, and Ishii discloses an image



transmission system according to claim 1, wherein the mobile robot is adapted to move toward the detected human according to a distance to the detected human (Higaki, Fig. 21, S105 and S107; Higaki, “distance to a person”, paragraph 29).

**Regarding claim 6**, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, further comprising a face database face database that stores images of a plurality of faces and face identifying means for comparing the cut out face image with the faces stored in the face database to identify the cut out face image (“Reference symbol 72 denotes a face database in which human facial recognition information is predefined. [0041] The face recognition section 60 picks out only the face part from the color image 81, based on the face position coordinates 105 and 106, and obtains a face feature vector. The face recognition section 60 searches the face database 72 based on the data similar to the obtained feature quantity, and in the case where corresponding face data exists, stores the individual person ID 104 assigned to the corresponding face data in the memory 8. The generation operation for the 3D object data 100 described here is repeatedly carried out regardless of the other processing status.”, Higaki, paragraph 86).

**Regarding claim 7**, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the face identifying means comprises means for detecting an outline of the detected human, and identifying a face as an area defined under an upper part of the outline of the detected human (Higaki,

Fig. 6, num. S32 “Extract Head Vertex Point” immediately after S31 “Extract Outline”;  
“As can be understood from FIG. 15, in step f1, one of the the local modules processes the video signals representing those pixels near the sides of the rectangle (FIG. 11D), thereby detecting the outline of the subject's head.”, Kuno, column 12, lines 12-15).

**Regarding claim 8**, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the human detecting means is adapted to detect a human as a moving object that changes in position from one frame of the image to another (Higaki, paragraph 50; Higaki, paragraph 44).

**Regarding claim 9**, the combination of Higaki, Kuno, and Ishii discloses an image transmission system according to claim 1, wherein the face image of the detected human occupies a substantially entire area of the cut out portion of the image (Kuno, “and the signals showing the subject’s image are transmitted to a CRT display installed in a monitor room”, column 1, lines 60-62, “the image of the subject’s head is extracted from the input image (Figure 11A)”, column 9, lines 43-44).

### **Double Patenting**

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory

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obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1 and 10 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/814343 in view of Kuno (US 5,802,494).

Claim 1 of copending application 10/814343, while disclosing a camera, a human detecting means, a power drive unit, an image cut out means and an image transmission means does not teach a face identifying means and a face image cut out means and means for monitoring state variables comprising a current position of the robot, the image transmitting means transmitting the monitored state variables in addition to cut out face image.

Kuno teaches a system in the same field of image transmission for a mobile robot, comprising the face identifying means and a face image cut out means and

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means for monitoring state variables comprising a current position of the robot, the image transmitting means transmitting the monitored state variables in addition to cut out face image.

It would have been obvious to modify claim 1 of application 10/814343 to include a face identifying means and a face image cut out means because the face of a human being is the most identifiable part of a human being and including the rest of the body is unnecessary in that it does not add much additional information that cannot be obtained from viewing solely the face and it would have been obvious to include means for monitoring state variables comprising a current position of the robot and transmitting this information along with the cut out face image as it is in essence the same thing since Kuno's transmission of the face image will indicate both the changing facial expressions (state variables) and the current position of the robot in the room/hospital at least relative to the patient in order to allow the robot to be navigated remotely by a joystick, which is well-known in the art, and viewing of remotely acquired images including changing state variables (facial expressions) for monitoring and safety purposes, which is also well-known in the art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELISA M. RICE whose telephone number is (571)270-

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1582. The examiner can normally be reached on 12:00-8:30p.m. EST Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571)272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elisa M Rice/  
Examiner, Art Unit 2624

**/Vikkram Bali/  
Supervisory Patent Examiner, Art Unit 2624**